PROJECT NUMBER: 2525
PROJECT TITLE: Tobacco Chemistry
PROJECT LEADER: S. Tafur
PERIOD COVERED: April, 1988

I. NATURAL PRODUCTS CHEMISTRY

A. **Objective**: To isolate, identify and/or analyze natural compounds with major emphasis on tobacco and tobacco products.

B. **Results**: In preparation for countercurrent chromatography (CCC) of a tobacco glycoside fraction, settling times were determined and partition coefficients were estimated for a number of solvent systems. Two systems provide partitioning in an acceptable range for CCC (1).

Several fractions prepared from Fr III were submitted to Flavor Development for subjective evaluation (2).

C. **Plans**: Continue fractionation of Bright tobacco extract fractions and purification of specific compounds.

D. **References**:
1. Core, M. Notebook No. 8608, p.52.
2. Tafur, S. Notebook No. 8490, p.137.

II. LOW NICOTINE

A. **Objective**: To examine characteristics of unextracted nicotine.

B. **Results**: Selected tobacco materials were submitted for nicotine analyses by both pyrolysis and extraction in an effort to understand more about the nature and occurrence of unextracted nicotine. The data indicated genetically low alkaloid tobaccos and N. glutinosa contain unextractable nicotine while tomacco (Bright tobacco grafted on tomato root stock) and Bright (Coker 347) roots do not (1).

The study of the desorption kinetics of nicotine from filler was completed. Desorption curves were plotted for neat nicotine and nicotine from control and ART fillers and rate constants were derived (2).

C. **Plans**: Continue to investigate genetic and cultural factors which influence the amount of unextracted nicotine in tobacco materials.

D. **References**:
1. Izac, R. Notebook No. 8632, p.20.
2. Core, M. Notebook No. 8608, p.52.

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III. SS/MS FLAVOR DISTRIBUTION

A. **Objective**: To examine the smoke distribution of selected flavors from flavor-release compounds.

B. **Results**: Additional PM Blues smoke samples (SS TPM and chamber wash, MS TPM, and butt) were provided to J. Naworal (Project 2501) for development of a GC/MS method for analysis of vanillin. Cigarettes were prepared with 300ppm glucovanillin core-injected or applied to the cigarette paper. Analyses of smoke fractions from these cigarettes are in progress (1).

Work was initiated with R. Levins (Project 6908) on the study of the smoke distribution of menthol from glucose menthylcarbonate (GMC) (1).

C. **Plans**: Complete both studies and report results as soon as possible.

D. **References**:
1. Tafur, S. Notebook No. 8490, p.137.

IV. GREENHOUSE STUDIES

A. **Objective**: To maintain the R&D greenhouses, to conduct plant research studies and to provide greenhouse-grown tobacco materials for support of other R&D programs.

B. **Results**: The harvest of roots from Group 10 of the hydroponic Burley 21 plants was completed. Over 11 Kg of fresh root material were produced in this group for use by Project 1904 (1).

Plans were made to set up field plots at the Whiteville, N.C. Tobacco Research Station for the production of U.S. grown Oriental tobacco under specified cultural practices (1).

C. **Plans**: Continue to produce fresh root tissue by hydroponic culture. Monitor the field plots as needed.

D. **References**:
1. Bass, R. Notebook No. 8607, pp. 21-24. (West, G. Notebook No. 8559).

V. SUPPORT ACTIVITIES

A. **Objective**: To provide requested assistance for special projects.

B. **Results**: Assistance was provided for the preparation of 65 gallons of potassium propylparaben. HPLC analyses were conducted of the prepared solution to measure the degree of hydrolysis (1).

A blended filler was sprayed with 1000 ppm β-cyclocitrylidene acetic acid (CR-2085) and handmade cigarettes were prepared (2).

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Five menthol-release compounds were sprayed onto 25g batches of a blended filler and handmade cigarettes were fabricated (3).

C. **References**:

1. Izac, R. Notebook No. 8632, p. 20.
2. Tafur, S. Notebook No. 8490, p. 137.
3. Bass, R. Notebook No. 8607, p. 21-24.

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